REMARKS

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

I. EXAMINER INTERVIEW

Applicants are grateful for the telephone interview with Examiner Steadman during which the Supplemental Amendment filed August 10, 2005 was discussed.

II. CLAIM STATUS & AMENDMENTS

Claims 1-13 and 15 are pending.

Claims 13 and 15 are rejected.

In item 7 on page 1 and in item 13 on page 8, it is indicated that claim 1 is objected to for a minor grammatical issue, but is otherwise allowed.

Claims 2-12 are withdrawn as non-elected subject matter.

Claim 1 is amended to recite "the amino acid sequence of SEQ ID NO: 2" instead of "an amino acid sequence of SEQ ID NO: 2" as suggested by the Examiner.

Claims 13 and 15 are amended along the lines suggested by the Examiner to correct a grammatical error by adding "has" after "a nucleotide sequence that" in step (d) of both claims.

Support for the above amendments can be found in the claims as filed.

Therefore, no new matter has been added by this amendment.

II. CLAIM OBJECTIONS

In item 10 on page 3 of the Office Action, claims 13 and 15 were objected to for containing a minor grammatical error.

It item 11 on page 3, claim 1 was objected to for the recitation "an amino acid sequence."

The claims have been amended along the lines suggested by the Examiner. Thus, the present amendment overcomes the above objections of claims 1, 13 and 15.

III. ENABLEMENT REJECTION

In item 12 on pages 4-8, claims 13 and 15 were rejected under 35 U.S.C. § 112, first paragraph, on the basis that the specification is only enabling for the polypeptide of SEQ ID NO: 2 and a method for production thereof by culturing a host cell transformed with a vector comprising the nucleic acid of SEQ ID NO: 1 or a nucleic acid encoding SEQ ID NO: 2, and not for polypeptide variants encoded by nucleic acids that hybridize with SEQ ID NO: 1 under stringent conditions or nucleic acids that share at least 95% homology with SEQ ID NO: 1.

On page 5 of the Office Action, it is indicated that the disclosure is limited to the single working example of SEQ ID NO:2 and a method of making this polypeptide having PF1022 activity, because there is no working example of a variant of SEQ ID NO: 1 that encodes a polypeptide having PF1022 synthetase activity.

On pages 6-7 of the Office Action, it is indicated that the hybridization under stringent conditions language in part (c) and the "at least 95% homology" in part (d) of claims 13 and 15 are so broad as to encompass a vast number of nucleotide sequences encoding polypeptide variants having PF1022 synthetase activity.

This rejection is respectfully traversed for the same reasons set forth in the response of July 11, 2005 and for the following reasons.

The claims are directed to an isolated polypeptide having PF1022 activity and a method of making such.

Specifically, element (c) of claims 13 and 15 requires that the polypeptide is encoded by a nucleotide sequence that hybridizes with the nucleotide sequence of SEQ ID NO: 1 under stringent conditions at 0.2 x SSC concentration (1 x SSC: 15 mM trisodium citrate, 150 mM sodium chloride) in a 0.1 % SDS solution at 60°C for 15 minutes and which encodes a protein

having PF1022 synthetase activity. Accordingly, the claims clearly define the specific stringent conditions required as set forth on page 6, lines 11-16 of the disclosure.

Also, element (d) of claims 13 and 15 requires that the polypeptide is encoded by a nucleotide sequence that has at least 95% homology to the nucleotide sequence of SEQ ID NO: 1 and which encodes a protein having PF1022 synthetase activity.

As argued in the July11, 2005 response, it is respectfully submitted that the polypeptides encompassed by claims 13 and 15 do not include the vast number of variant nucleotide sequences encoding polypeptide variants of SEQ ID NO:2 having PF1022 synthetase activity as asserted by the Office. Moreover, it is respectfully submitted that it would not take undue experimentation to make and use the full scope of the claims.

Regarding the hybridization under stringent conditions and the at least 95% homology language, Applicants again respectfully submit that PTO policy has long been to recognize that such language is patentable and enabled.

As discussed in the prior response, please note Examples 9 and 10 of the PTO's Written Description Examination Guidelines, 66 Fed. Reg. 1099 (Jan. 5, 2001), copies of which were attached to the July 11, 2005 response.

The Examples and analysis in the Guidelines are instructive for the instant case even though the Guidelines deal with written description issues, as opposed to enablement. In Example 9, the claim is drawn to a genus of nucleic acids which hybridize under stringent conditions to a known DNA sequence, SEQ ID NO: 1, and encode a protein with a specific activity. There is a single species disclosed, i.e., SEQ ID NO: 1. Regarding the genus, it is clearly indicated that "a person of skill in the art would not expect substantial variation among species encompassed within the scope of the claims because the highly stringent conditions set forth in the claims yield structurally similar DNAs."

In Example 10, the claims are drawn to a process for producing an isolated DNA that hybridizes under stringent conditions to a known sequence and to the DNA sequences which

hybridize to the known sequence. Again, the PTO recognized that there is no substantial variation within the genus because of the stringency of hybridization yields structurally similar molecules.

Elements (c) and (d) of the instant claims are analogous to the claims analyzed in the above-described examples. Moreover, as recognized by the PTO in these examples, it is respectfully submitted that a person of skill in the art would not expect substantial variation among the species encompassed within the scope of the claims, because the highly stringent conditions set forth in the claims yield structurally similar DNAs.

In addition, the courts have also recognized that the instant claim language is patentable and enabled. Again, please take note of the following decisions Enzo Biochem, Inc. v. Gen-Probe Inc., 296 F.3d 1316, 1324, 63 USPQ2d 1609, 1613 (Fed. Cir. 20002) and Ex parte Herrmann, No. 2002-1630 (BPAI 2003), copies of which were attached to the July 11, 2005 response.

In Enzo, the Federal Circuit held that "[a]dequate written description may be present for a genus of nucleic acids based on their hybridization properties, 'if they hybridize under highly stringent conditions to known sequences because such conditions dictate that all species within the genus will be structurally similar.'" Enzo, 296 F3d. at 1327, 63 USPQ2d at 1615.

The Board in Herrmann dealt with similar issues for a claim directed to a genus of DNA that hybridize under stringent conditions. The Board found that polynucleotides encompassed by the claims directed to DNA that hybridize under stringent conditions to known DNA "do not include the 'potentially infinite number of variants'" as posited by the Examiner. Herrmann, page 17.

In view of the above, it is again respectfully submitted that, contrary to the position taken in the instant Office Action, the PTO correctly recognizes that there is no substantial variation within a claimed genus of sequences, because hybridization under stringent conditions yields structurally similar molecules and excludes the vast majority of variants.

Furthermore, it is well established in the art that the term "stringent conditions" refers to hybridization and washing under conditions that permit only binding of a nucleic acid molecule, such as an oligonucleotide or cDNA molecule probe, to highly homologous sequences. Accordingly, sequences that hybridize under stringent conditions are limited to those sequences that form the requisite number of base pairs over the hybridizing sequence.

As recognized by the PTO, hybridization under the specified stringent conditions of the claims require that the nucleotide sequence be structurally similar to the nucleotide sequence of SEQ ID NO:1. Accordingly, by using stringent conditions, the "vast number" of variant polynucleotides would be excluded from the claims. In fact, most variants would simply not hybridize to SEQ ID NO:1 under such conditions. Consequently, the claims are of a much narrower scope than, for example, hybridization under non-stringent conditions. Thus, in contrast to the position taken in the Action, the polypeptides encompassed by claims 13 and 15 do not include a vast number of polypeptide variants of SEQ ID NO:2 having PF1022 synthetase activity.

Furthermore, it is well established that the test of enablement is whether one reasonably skilled in the art could make or use the invention based on the disclosure in the specification coupled with the knowledge in the art without undue experimentation. The fact that experimentation may be complex does not necessarily make it undue, if the art typically engages in such experimentation. The test is not whether any experimentation is necessary, but whether, if experimentation is necessary, it is undue. In fact, the test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed. See M.P.E.P. § 2164.01.

As discussed in the previous response, hybridization techniques and procedures are common and well known in the biotech industry. As such, it would only require routine experimentation for the skilled artisan to isolate DNA that hybridizes under the specific stringent

conditions of the claims to SEQ ID NO:1 and to produce the polypeptide encoded by this DNA. Likewise, it would only require routine experimentation to then test the polypeptide for the PF1022, cyclic depsipeptide synthetase activity.

Accordingly, it is respectfully submitted that it would not take undue experimentation to utilize the routine techniques disclosed in the specification and known in the art to isolate the limited number of DNA that hybridize under stringent conditions to SEQ ID NO:1, express the nucleotides to obtain the polypeptides encoded thereby and then test the limited number of polypeptides encoded by these nucleotides for the requisite PF1022 activity.

As to the Office's concern regarding a lack of a working example of a variant nucleotide, it is well established that a specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without an undue amount of experimentation. See M.P.E.P. § 2164.02. Furthermore, it would not take undue experimentation to make and use the full scope of the claimed invention for the reasons discussed above.

On pages 6-7 of the Office Action, it is indicated that the hybridization under stringent conditions language in part (c) and the "at least 95% homology" in part (d) of claims 13 and 15 are so broad as to encompass a vast number of nucleotide sequences encoding polypeptide variants having PF1022 synthetase activity, because the hybridization under stringent conditions corresponds to 85% identity and the "at least 95% homology" corresponds to 19^{3210} variants.

Applicants respectfully request clarification as to how these numbers were calculated. Regarding the stringent conditions language, the Examiner has relied upon the Meinkoth equation in US 6,057,491 at column 7, lines 30-55. Is the Examiner referring to the equation at line 35 of column 7? If so, what amounts were entered into this equation? Also, how were 19^{3210} variants calculated from 95% homology?

Lastly, it is again respectfully submitted that this rejection conflicts with accepted practice at the PTO regarding at least 95% homology and hybridization under stringent conditions claim

language. Attached to the July 11, 2005 response were results of an online search of the PTO database for claim language containing "stringent conditions" to show that the PTO has allowed over a thousand patents with such claim language. Furthermore, attached herewith are results of an online search of the PTO database for the "at least 95% homology". These results also show that the PTO has allowed thousands of patent with such claim language. While it is acknowledged that patentability must determined on a case-by-case basis, the results of the online search demonstrate that the PTO has long accepted such language in the claims. Thus, it appears that the rejection conflicts with a well accepted practice at the PTO.

Therefore, the scope of enablement rejection under 35 U.S.C. § 112, first paragraph, is untenable and should not be applied to amended claims 13 and 15.

CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is in condition for allowance and early notice to that effect is hereby requested.

If it is determined that the application is not in condition for allowance, the Examiner is invited to telephone the undersigned attorney at the number below if he has any suggestions to expedite allowance.

Respectfully submitted,

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